

REMARKS

The Applicants respectfully request further examination and consideration in view of the arguments set forth fully below. Claims 1-18 were previously pending in this application. Within the previous Office Action, Claims 1-18 have been rejected. By the above amendments, Claims 13 and 16 have been amended. Accordingly, Claims 1-18 are currently pending.

Rejections Under 35 U.S.C. § 103

Within the Office Action, Claims 13-15 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,755,426 to Kokai et al. ("Kokai") in view of U.S. Patent Application No. 2002/0114980 to Gunsel et al. ("Gunsel"). Applicants respectfully disagree.

Within the Office Action, it is concluded that Kokai teaches an intermediate layer wherein the intermediate layer is actually part of the first protective layer. Applicants respectfully disagree. First of all, the claimed invention includes four separate and distinct layers: a nitride layer, an organic layer, an intermediate film and a membrane. Therefore, prior art that only has three layers does not teach the present invention. Specifically, it is stated within the Office Action that, "this surface oxidized portion of the first protective layer which Examiner deems reads on the limitation 'intermediate layer.'" [Office Action, Page 6] Therefore, there are not two separate layers. According to the Office Action, there is the first protective layer and a portion of it which is considered to be the intermediate layer. However, the claimed invention has these as two distinct layers.

Furthermore, in the present invention, the intermediate film is "a kind of the hard membrane" giving further evidence that the conclusions within the Office Action are not supported. [Present Specification, Page 15, lines 1-2] Therefore Kokai, Gunsel and their combination do not teach an intermediate film formed on the organic film.

By the above amendments, specific thickness ranges have been given to the layers of the present invention which further distinguish the present invention from the prior art.

The independent Claim 13 is directed to a magnetic sensor including a substrate having a magnetism-sensitive element formed thereon and which detects a magnetic signal from a medium having magnetic signals recorded thereon. The magnetic sensor of Claim 13 has an inorganic film formed on the magnetism-sensitive element to a thickness between 100 nm to 3000 nm, an organic film formed on the inorganic film to a thickness of several μm and an

amorphous carbon hydride membrane formed on the organic film to a thickness of 0.1 μm to 5 μm , wherein said magnetic sensor has said amorphous carbon hydride membrane disposed opposite to the medium, and moves relatively along said medium. As described above, neither Kokai, Gonsel nor their combination teach layers within the thickness ranges claimed herein. For at least these reasons, the independent Claim 13 is allowable over the teachings of Kokai, Gonsel and their combination.

The independent Claim 14 is directed to a magnetic sensor including a substrate having a magnetism-sensitive element formed thereon and which detects a magnetic signal from a medium having magnetic signals recorded thereon. The magnetic sensor of Claim 14 has an inorganic film formed on the magnetism-sensitive element, an organic film formed on the inorganic film, an intermediate film formed on the organic film and a membrane formed on the intermediate film, wherein said magnetic sensor has said membrane disposed opposite to the medium, and moves relatively along said medium. As described above and previously, neither Kokai, Gonsel nor their combination teach an intermediate layer. For at least these reasons, the independent Claim 14 is allowable over the teachings of Kokai, Gonsel and their combination.

Claim 15 is dependent upon the independent Claim 14. As discussed above, the independent Claim 14 is allowable over the teachings of Kokai, Gonsel and their combination. Accordingly, Claim 15 is also allowable as being dependent upon an allowable base claim.

Within the Office Action, Claims 16-18 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Kokai in view of Gonsel and further in view of applicants' admissions. Applicants respectfully disagree.

Within the Office Action, it is concluded that Kokai teaches an intermediate layer wherein the intermediate layer is actually part of the first protective layer. Applicants respectfully disagree. As described above, the claimed invention includes four separate and distinct layers: a nitride layer, an organic layer, an intermediate film and a membrane. Therefore, prior art that only has three layers does not teach the present invention. Specifically, it is stated within the Office Action that, "this surface oxidized portion of the first protective layer which Examiner deems reads on the limitation 'intermediate layer.'" [Office Action, Page 6] Therefore, there are not two separate layers. According to the Office Action, there is the first protective layer and a portion of it which is considered to be the intermediate layer. However, the claimed invention has these as two distinct layers.

Furthermore, in the present invention, the intermediate film is “a kind of the hard membrane” giving further evidence that the conclusions in the Office Action are not supported. [Present Specification, Page 15, lines 1-2] Therefore Kokai, Gonsel and their combination do not teach an intermediate film formed on the organic film.

By the above amendments, specific thickness ranges have been given to the layers of the present invention which further distinguish the present invention from the prior art.

The independent Claim 16 is directed to a position detector. The position detector of Claim 16 comprises a magnetic scale with position signals longitudinally provided thereon and a magnetic sensor including a substrate having a magnetism-sensitive element formed thereon, an inorganic film formed on the magnetism-sensitive element to a thickness between 100 nm to 3000 nm, an organic film formed on the inorganic film to a thickness of several μm and an amorphous carbon hydride membrane formed on the organic film to a thickness of 0.1 μm to 5 μm , wherein said magnetic sensor has said amorphous carbon hydride membrane disposed opposite to the magnetic scale, and moves relatively along the magnetic scale to detect position signals provided on the magnetic scale. As described above, neither Kokai, Gonsel nor their combination teach layers within the thickness ranges claimed herein. For at least these reasons, the independent Claim 16 is allowable over the teachings of Kokai, Gonsel and their combination.

The independent Claim 17 is directed to a position detector. The position detector of Claim 17 comprises a magnetic scale with position signals longitudinally provided thereon and a magnetic sensor including a substrate having a magnetism-sensitive element formed thereon, an inorganic film formed on the magnetism-sensitive element, an organic film formed on the inorganic film, an intermediate film formed on the organic film and a membrane formed on the intermediate film, wherein said magnetic sensor has said membrane disposed opposite to the magnetic scale, and moves relatively along the magnetic scale to detect position signals provided on the magnetic scale. As described above and previously, neither Kokai, Gonsel nor their combination teach an intermediate layer. For at least these reasons, the independent Claim 17 is allowable over the teachings of Kokai, Gonsel and their combination.

Claim 18 is dependent upon the independent Claim 17. As discussed above, the independent Claim 17 is allowable over the teachings of Kokai, Gonsel and their combination. Accordingly, Claim 18 is also allowable as being dependent upon an allowable base claim.

Within the Office Action, Claims 1-6 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Kokai in view of Günsel and further in view of U.S. Patent No. 4,729,924 to Skorjanec (“Skorjanec”). Applicants respectfully disagree.

Kokai teaches a magnetic recording medium which comprises a substrate, a magnetic layer on the substrate and a protective layer which is formed directly on the magnetic layer or on an undercoat layer formed on the magnetic layer, the protective layer comprising a carbonaceous material essentially consisting of carbon, hydrogen and oxygen, which has improved traveling properties and abrasion resistance. [Kokai, Abstract] Further, Kokai teaches “when the ferromagnetic layer comprising cobalt is thermally treated in the presence of water to form a water-containing oxide of trivalent cobalt on the surface of the ferromagnetic layer before two protective layers are formed, durability of the magnetic recording medium is further increased.” [Kokai, col. 5, lines 59-64] As shown by the Figures 2-4, Kokai teaches a magnetic recording medium comprising a polyester film 1, a ferromagnetic metal thin layer 10, an intermediate layer 12 or a polymer protective layer 13 and an amorphous carbonaceous protective layer 11. [Kokai, Figures 2-4] As recognized within the Office Action, Kokai does not teach using a protective layer on a magnetic sensor. Furthermore, Kokai does not teach forming a nitride layer.

Günsel teaches a magnetic recording medium and method for forming the magnetic recording medium. The magnetic recording medium includes a magnetic layer formed on a non-magnetic support, and a lubricant layer formed over the magnetic layer. The lubricant layer includes a compound selected from the group consisting of hydrocarbyl-substituted cyclopentanes, hydrocarbyl-substituted cyclopentenenes, hydrocarbyl-substituted cyclopentadienes, and mixtures or derivatives thereof and, optionally, one or more additives. The lubricant layer also may be used on a magnetic head for reading and writing information on a magnetic recording medium. [Günsel, Abstract] Furthermore, Günsel does not teach forming a nitride layer.

Skorjanec teaches a bonding layer on a magnetic layer with reaction products of cobalt and chromium which are selected from oxides, nitrides and carbides of cobalt and chromium. [Skorjanec, col. 2, lines 1-7]

This is a classic case of impermissibly using hindsight to make a rejection based on obviousness. The Court of Appeals for the Federal Circuit has stated that “it is impermissible to use the claimed invention as an instruction manual or ‘template’ to piece together the teachings of the prior art so that the claimed invention is rendered obvious.” In Re Fritch, 972 F.2d, 1260, 1266, 23 USPQ2d 1780, 1784 (Fed. Cir. 1992). As recognized within the Office Action Kokai

does not teach forming a nitride layer. Gonsel also does not teach forming a nitride layer. Although Skorjanec teaches a nitride layer, there is no indication as to why it is properly combined with Kokai and Gonsel. Within the Office Action, it is stated that

It would, therefore, have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Kokai et al. in view of Gonsel et al. to form a nitride film meeting applicants' claimed limitations as taught by Skorjanec et al., since one of ordinary skill in the art would have recognized that the nitride film provides equivalent benefit as the Kokai et al. taught oxide film.

It is only with the benefit of the present claims, as a "template" that there is any motivation to combine the nitride layer of Skorjanec with Kokai and Gonsel. No such motivation can be found in the teachings of any of the references. To conclude that the combination of Kokai, Gonsel, Skorjanec is obvious, based on the teachings of these references, is to use hindsight based on the teachings of the present invention and to read much more into Kokai, Gonsel, Skorjanec than their actual teachings. This is simply not permissible based on the directive from the Court of Appeals for the Federal Circuit.

It is well settled that to establish a *prima facie* case of obviousness, three basic criteria must be met:

- 1) there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings;
- 2) there must be a reasonable expectation of success; and
- 3) the prior art reference, or references, must teach or suggest all the claim limitations. MPEP § 2143.

The burden of establishing a *prima facie* case of obviousness based on the teachings of Kokai, Gonsel and Skorjanec has not been met within the Office Action.

There is no motivation to combine the teachings of Kokai, Gonsel and Skorjanec. Kokai teaches thermally treating the ferromagnetic layer comprising cobalt in the presence of water to form a water-containing oxide. [Kokai, col. 5, lines 59-64] Skorjanec teaches a bonding layer on a magnetic layer with reaction products of cobalt and chromium which are selected from oxides, nitrides and carbides of cobalt and chromium. [Skorjanec, col. 2, lines 1-7] There is no hint,

teaching or suggestion in either Kokai, Gonsel or Skorjanec to motivate one skilled in the art to combine their teachings. It is only with the benefit of the presently claimed invention as a “template” that one would consider combining the nitride layer of Skorjanec with the Kokai.

The independent Claim 1 is directed to a magnetic sensor including a substrate having a magnetism-sensitive element formed thereon and which detects a magnetic signal from a medium having magnetic signals recorded thereon. The magnetic sensor of Claim 1 has a nitride film formed on the magnetism-sensitive element, an organic film formed on the nitride film and a membrane formed on the organic film, wherein said magnetic sensor has said membrane disposed opposite to the medium, and relatively moves along said medium. As described above, the combination of Kokai, Gonsel and Skorjanec is improper. For at least these reasons, the independent Claim 1 is allowable over the teachings of Kokai, Gonsel, Skorjanec and their combination.

Claims 2-6 are dependent upon the independent Claim 1. As discussed above, the independent Claim 1 is allowable over the teachings of Kokai, Gonsel, Skorjanec and their combination. Accordingly, Claims 2-6 are all also allowable as being dependent upon an allowable base claim.

Within the Office Action, Claims 7-12 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Kokai in view of Gonsel and of applicant’s admissions and further in view of Skorjanec.

The Applicants respectfully disagree. As described above, the combination of Kokai, Gonsel and Skorjanec is improper. For the same reasons, the combination of Kokai, Gonsel, applicant’s admissions and Skorjanec is also improper.


The independent Claim 7 is directed to a position detector. The position detector of Claim 7 comprises a magnetic scale with position signals longitudinally provided thereon and a magnetic sensor including a substrate having a magnetism-sensitive element formed thereon, a nitride film formed on the magnetism-sensitive element, an organic film formed on the nitride film, and a membrane formed on the organic film, wherein said magnetic sensor has said membrane disposed opposite to the magnetic scale, and relatively moves along the magnetic scale to detect position signals provided on the magnetic scale. As described above, the combination of Kokai, Gonsel, applicant’s admissions and Skorjanec. For at least these reasons, the independent Claim 7 is allowable over the teachings of Kokai, Gonsel, applicants’ admissions, Skorjanec and their combination.

Claims 8-12 are dependent upon the independent Claim 7. As discussed above, the independent Claim 7 is allowable over the teachings of Kokai, Gungel, applicants' admissions, Skorjanec and their combination. Accordingly, Claims 8-12 are all also allowable as being dependent upon an allowable base claim.

For the reasons given above, Applicants respectfully submit that all of the pending claims, Claims 1-18, are now in condition for allowance, and allowance at an early date would be greatly appreciated. Should the Examiner have any questions or comments, he is encouraged to call the undersigned at (408) 530-9700 to discuss the same so that any outstanding issues can be expeditiously resolved.

Respectfully submitted,
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